



0912GN-300

300 Watts - 65 Volts, 128 μ s, 10%
Broad Band Data Link 960 - 1215 MHz

GENERAL DESCRIPTION

The 0912GN-300 is an internally matched, COMMON SOURCE, class AB GaN on SiC HEMT transistor capable of providing over 18dB gain, 300 Watts of pulsed RF output power at 128 μ s pulse width, 10% duty factor across the 960 to 1215 MHz band. The transistor has internal pre-match for optimal performance. This hermetically sealed transistor can be used for Broadband Avionics Data Link applications. It utilizes gold metallization and eutectic attach to provide highest reliability and superior ruggedness.

CASE OUTLINE

55-KR

Common Source

ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation

Device Dissipation @ 25°C 600 W

Maximum Voltage and Current

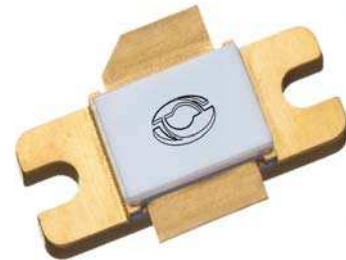
Drain-Source Voltage (V_{DSS}) 150 V

Gate-Source Voltage (V_{GS}) -8 to +0 V

Maximum Temperatures

Storage Temperature (T_{STG}) -55 to +125 °C

Operating Junction Temperature +200 °C



ELECTRICAL CHARACTERISTICS @ 25°C

Symbol	Characteristics	Test Conditions	Min	Typ	Max	Units
Pout	Output Power	Pout=300W, Freq=960, 1090, 1215 MHz	300			W
Gp	Power Gain	Pout=300W, Freq=960, 1090, 1215 MHz	17.5	18.5		dB
η_d	Drain Efficiency	Pout=300W, Freq=960, 1090, 1215 MHz	45	52		%
Dr	Droop	Pout=300W, Freq=960, 1090, 1215 MHz			0.7	dB
VSWR-T	Load Mismatch Tolerance	Pout=300W, Freq= 1215MHz			3:1	
Θ_{jc}	Thermal Resistance	Pulse Width=128uS, Duty=10%			0.3	°C/W

- **Bias Condition: Vdd=+65V, Idq=50mA average current (Vgs= -2.0 ~ -4.5V) with Gate Pulsing at Pulse Width 400us, Period at 1.28ms**

FUNCTIONAL CHARACTERISTICS @ 25°C

$I_{D(Off)}$	Drain leakage current	$V_{gs} = -8V, V_D = 65V$			6	mA
$I_{G(Off)}$	Gate leakage current	$V_{gs} = -8V, V_D = 0V$			5	mA
BV_{DSS}	Drain-source breakdown voltage	$V_{gs} = -8V, I_D = 5mA$	250			V

Issue January 2013

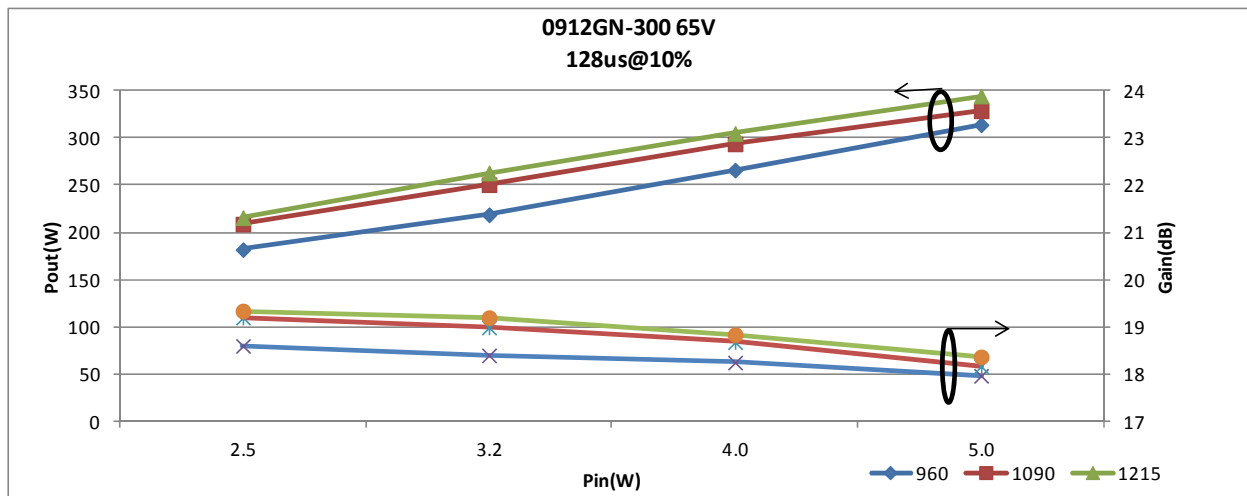
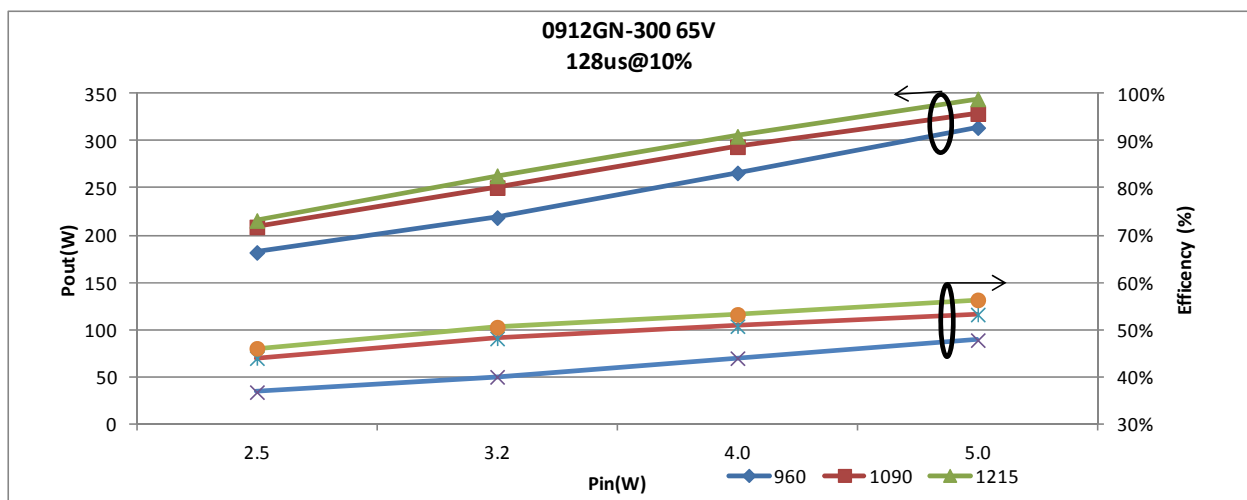


0912GN-300

300 Watts -128us 10% Transistor
65 Volts, 960 MHz-1215MHz

Typical RF Performance Data

Frequency	Pin (W)	Pout (W)	Id (A)	Eff (%)	RL(dBc)	G (dB)
0.96GHz	4.6	300	0.98	47	-7	18.2
1.09GHz	4.1	300	0.89	51.8	-7	18.6
1.215GHz	3.8	300	0.86	53.8	-12	18.9

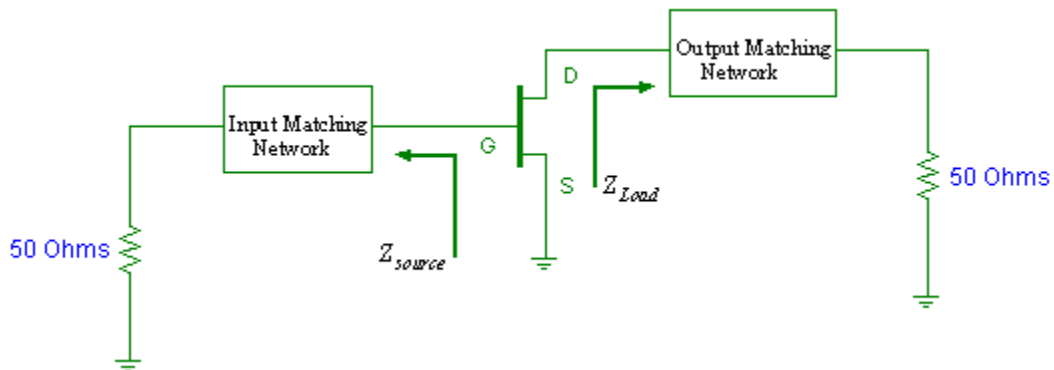




0912GN-300

300 Watts -128us 10% Transistor
65 Volts, 960 MHz-1215MHz

Transistor Impedance Information



Note: Z_{source} is looking into the input circuit;
 Z_{Load} is looking into the output circuit.

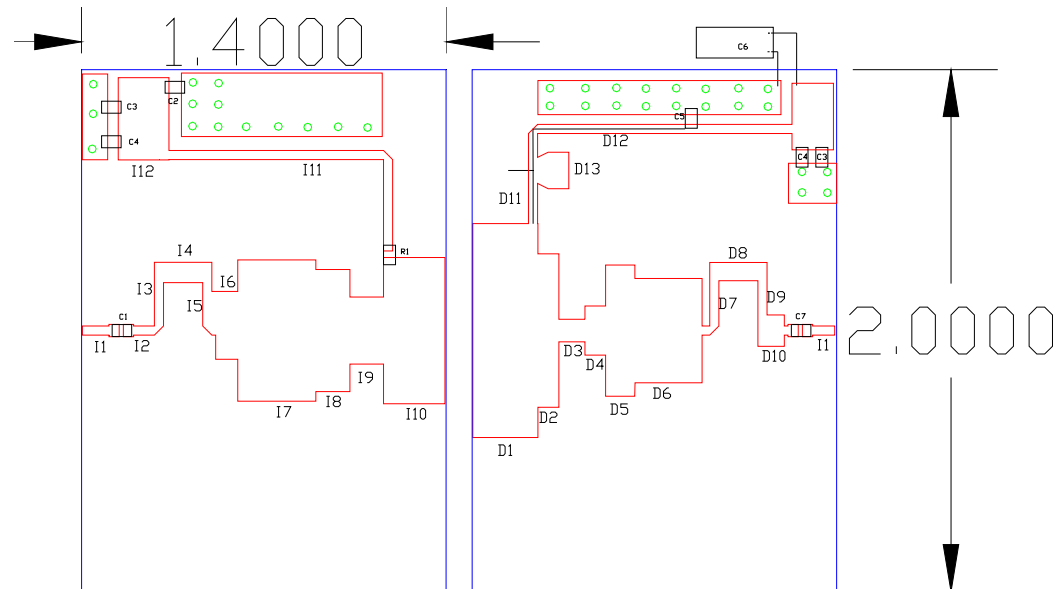
Freq (GHz)	Impedance Data	
	Z_{source}	Z_{Load}
0.96	$1.68 - j2.96$	$3.245 - j2.446$
1.09	$1.58 - j1.68$	$3.368 - j1.859$
1.215	$1.59 - j0.42$	$3.415 - j1.385$



0912GN-300

250 Watts -128us 10% Transistor
65 Volts, 960 MHz-1215MHz

TEST CIRCUIT DIAGRAM



Board Material: Roger Duroid 6006 @ 25 Mil Thickness, Er=6.15

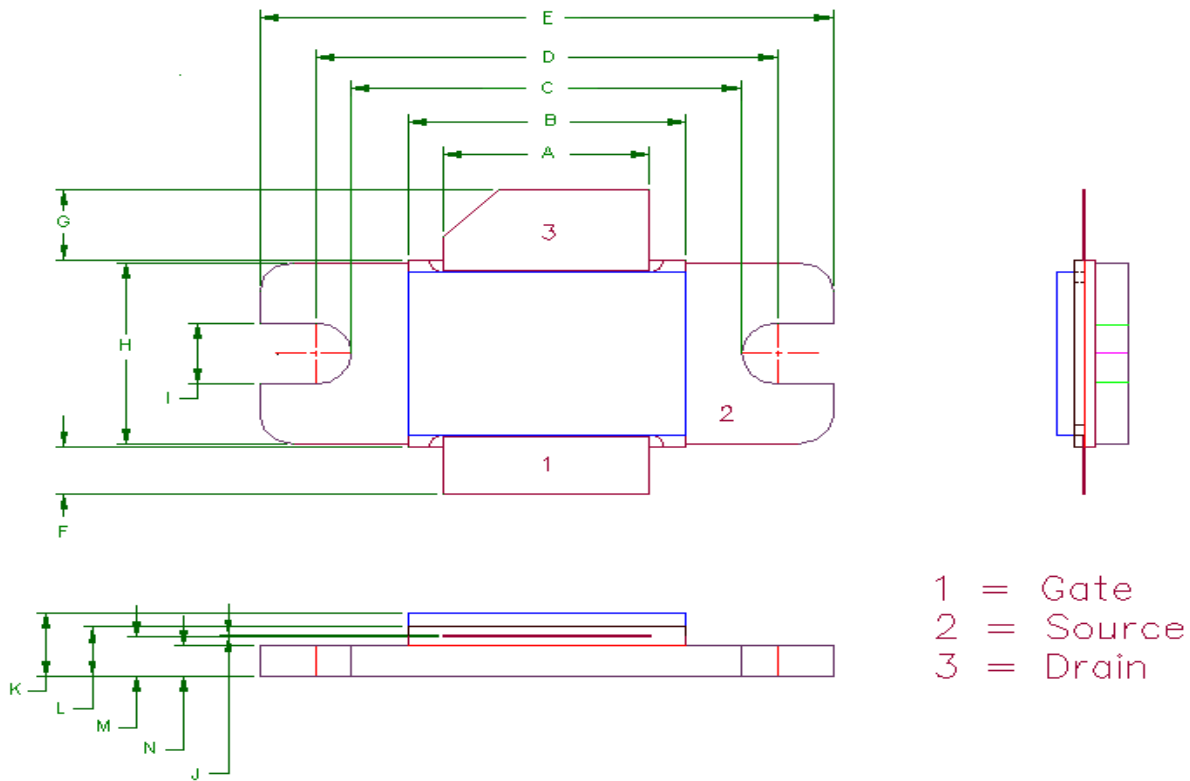
Component List			Input layout			Output layout		
Item	Description	Value	Item	W(mil)	L(mil)	Item	W(mil)	L(mil)
C1	ATC 800A	100pF	I1	36	95	D1	820	250
C2	ATC 100B	100PF	I2	36	80	D2	588	80
C3	ATC 100B	10000pF	I3	166	36	D3	86	100
C4	ATC 100B	1000pF	I4	78	220	D4	188	80
C5	ATC 100B	56PF	I5	201	36	D5	502	112
C6	Elyctrylic Capacitor (63V)	2200UF	I6	260	85	D6	400	258
C7	ATC 800A	12PF	I7	542	300	D7	210	36
R1	0805	11.5 ohm	I8	468	130	D8	70	220
			I9	258	130	D9	130	36
note	C3, C4 X2		I10	560	236	D10	120	102
			I11	36	1200	D11	36	204
			I12	315	195	D12	36	741
						D13	140	80



0912GN-300

250 Watts -128us 10% Transistor
65 Volts, 960 MHz-1215MHz

55-KR Package Dimension



Dimension	Min (mil)	Min (mm)	Max (mil)	Max (mm)
A	370	9.40	372	9.44
B	498	12.65	500	12.7
C	700	17.78	702	17.83
D	830	21.08	832	21.13
E	1030	26.16	1032	26.21
F	101	2.56	102	2.59
G	151	3.84	152	3.86
H	385	9.78	387	9.83
I	130	3.30	132	3.35
J	003	.076	004	0.10
K	135	3.43	137	3.48
L	105	2.67	107	2.72
M	085	2.16	86	2.18
N	065	1.65	66	1.68

MICROSEMI RFIS TS RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE. TO VERIFY THE CURRENT VERSION PLEASE CHECK OUR WEB SITE AT WWW.MICROSEMI.COM OR CONTACT OUR FACTORY DIRECTLY.